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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/547,791	04/12/2000	Steven Beck	1481.0170000	5403

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EXAMINER	
SHAFFER, ERIC T	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 09/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/547,791	BECK ET AL.	
	Examiner	Art Unit	
	Eric T. Shaffer	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *May 26, 2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4, 6-11,13-18,20-25,27 & 28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-11,13-18,20-25,27 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This communication is in response to the amendments filed May 26, 2004.

Summary Of Instant Office Action

2. Applicant's arguments, filed May 26, 2004, concerning claims 1 - 28 have been considered and deemed unpersuasive. The rejections are maintained.

3. Claims 5, 12, 19 and 26 have been cancelled by the applicant and the applicant has not added any new claims. Claims 1 – 4, 6 – 11, 13 – 18, 20 – 25, 27 and 28 are pending and are prosecuted in the response set out below.

Comments

4. The applicant's disclosure of a means of accessing a database called open data base connectivity, wherein the ("the present invention may also be implemented using a standard database access method called Open Data Base Connectivity (ODBC). The goal of ODBC is to make it possible to access any data from any application, regardless of which DBMS is handling the data. ODBC manages this by inserting a middle layer, called a database driver, between an application and the DBMS. The purpose of this layer is to translate the application's data queries into commands that the DBMS understands", specification pages 36 - 37), places the renovation system within the technical arts and thus passes the two-pronged 101 rejection test.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1 – 4, 6 – 11, 13 – 18, 20 – 25, 27 and 28 are is rejected under 35 U.S.C. 103(a) as being unpatentable over McCabe et al (US 6,453,216) in view of Ton (US 6,397,162) and in further view of Greaves et al (US 4,626,992).

7. As per Claims 1, 8, 15 and 22, McCabe teaches a weather and terrestrial vegetation-based system for forecasting renovation and management for a body of water. McCabe teaches using weather data and vegetation soil moisture data to manage the volume of water used or available in storage for use in the irrigation of agricultural products or vegetation ("if an irrigation system is operated according to the method of the present invention, then the largest possible portion of water needed by the crop of turf will be contributed by natural rainfall and the least irrigation water will be used, consistent with maintaining a proper level of soil moisture for the crop or turf being irrigated", column 6, lines 48 - 54). McCabe also teaches management of a water level on a body of water by teaching a system ("that conserves water irrigating the zone that requires the greatest volume of water last", column 5, lines 35 -37), wherein the body of water is the body of water inherent in an irrigation system ("Station A will have dispersed 1200 gallons during the first hour", column 12, lines 12 - 14), wherein 1200 gallons constitutes a body of water and the volume of water dispensed from the body of water is given by the formulas (column 12, lines 25 - 27).

The system and method comprising:

stored therein data for analyzing the body of water wherein said database includes weather history data (Table 1, "rainfall in inches per month") and (Table 3, "temperature, rain, avg wind"), weather forecast data ("modifying watering schedule based on a high rain probability", column 10, lines 47 - 48) and body of water history data (figure 2);

a renovation system to execute a request from a user to analyze the body of water ("monitoring the flow of water exiting the watering station", column 3, lines 10 – 11, wherein a watering station is a body of water and monitoring is a form of analysis) and for renovation and management by using said weather history data (Table 1, "rainfall in inches per month"), said weather forecast data and said body of water history data ("Projected Statewide Water Demand and Supply", Figure 2) to determine potential problems for the body of water and potential solutions for said potential problems ("an irrigation system that provides a set in mode to provide the correct amount of water for newly planted crops or turf", column 5, lines 46 -47), wherein the solution to provide the correct amount of water inherently teaches the problem of too much or too little water being applied, as ("irrigation controllers apply water by controlling the amount of time a station is on in a fixed number of minutes, seconds, or other base time. The amount of water applied is based upon an estimate, a guess, or a previous measurement", column 13, lines 16 - 18).

Wherein said list of fundamental problems includes information about at least one of a density of nutrients within a soil within said vicinity of the body of water or a distribution of thermal energy within the body of water ("Temp deg F", Table 3), wherein temperature is information about the thermal heat energy within water.

McCabe et al however, does not specifically teach terrestrial vegetation history data or terrestrial vegetation forecast data or fish activity within a body of water. The data in the McCabe invention is also in a table form and data in the form of ("program sequences", column 2, line 56) but data is not specifically stored in an accessible database.

Ton teaches a terrestrial vegetation-based device for measuring evapotranspiration and using this measurement to control an irrigation system. Ton also does in fact teach terrestrial vegetation history data and terrestrial vegetation forecast data as a range of past values that are stored in the system database and used as a standard to predict and compare future vegetation measurements against (column 7, lines 39 – 45, "processed parameter of the plant's environment is realized on display 52 by a first displayed area 54 of a first color selected among at least two first colors, wherein each of these first colors represents a range of that parameter of the plant's environment. Similarly, a processed parameter of the plant itself is realized by a second displayed area 56 of a second color selected among at least two second colors, wherein each of these second colors represents a range of that parameter of the plant's itself."). Both are analogous art because they both teach applications of irrigation of plants.

It would have been obvious to one of ordinary skill in the art of irrigation systems at the time the invention was made to combine the McCabe irrigation system with the Ton irrigation system in order to develop an irrigation management system that used a wide variety of measures to determine when and how much to water a field of crops. It would be obvious to create this invention because combining vegetation measurement with water level measurement would increase the number of parameters involved in determining when crops should be irrigated and would increase the accuracy of such a device. Increasing the number of methods and factors of

measurement would reduce the level of error by presenting more facts to substantiate a conclusion, and would also increase the level of accuracy of the combined device, thereby improving the performance of a water level based and vegetation based irrigation management system.

Neither reference teaches information about fish activity in a body of water or storing data in an accessible database.

Greaves teaches a device that contains a historical database ("the historical database of the organism's movements", column 3, lines 42-43) of data about temperature ("environmental factors will be selected from a set including temperature, dissolved oxygen, conductivity, ammonia content, hardness, turbidity and alkalinity", column 5, lines 62-63), and wherein said list of observable problems includes information about at least one of a fish activity within a body of water, a density of terrestrial vegetation within a vicinity of he body of water, a taste of the body of water, and an odor of the body of water ("analyzing the observed movements of the test organisms; comparing the observed movements of the test organism with the predicted movement patterns and determining which differences if any are significant", column 6, lines 27 - 31), wherein test organisms are fish. All three are analogous art because they teach applications of measuring water properties such as temperature, levels, and quality.

It would have been obvious to one of ordinary skill in the art of irrigation systems at the time the invention was made to combine the combination of the McCabe irrigation system and the Ton system with the Greaves system in order to add the functionality of testing the water for numerous toxicity levels and for the ability to measure the water's ability to sustain life because if the water was dangerous to living organisms such as fish, then it would also be harmful to

plants being irrigated and to the people harvesting and consuming the plants. Testing the water for its effect on fish would add a cost effective measure of safety to the water supply. Furthermore, incorporation of a database to store the taught weather and body of water data would be useful because the data would be easy to update and change.

8. As per Claims 2, 9, 16 and 23, McCabe teaches a system and method, wherein said database data are one of passed in via a front end system, collected by said renovation system, or derived by said renovation system. Database data passed into a database via a front-end system is anticipated by McCabe el al, which teaches "the present invention next uses whatever weather inputs and soil inputs are available to calculate a start time that is proper to allow the irrigation system to deliver the necessary water" (column 6, lines 34 - 37).

9. As per Claims 3, 10, 17 and 24, McCabe teaches a system and method, comprising a front end system to receive a request to analyze the body of water for renovation and management, wherein the front end system is a web server. Sending data messages to remote locations by way of a communications network, one type of such communications networks being a web server, is anticipated by McCabe el al, which teaches "one or more messages are sent via various remote data communication methods to one or more irrigation controllers" (column 10, lines 54 - 56).

10. As per Claims 4, 11, 18 and 25, McCabe teaches a system and method, wherein said renovation system comprises:

processing modules for performing processing functions ("they are simply on or off sensors", column 3, line 33) where ("if the probability of rain is sufficiently high then there is little risk to the plants if the irrigation event is skipped", column 10, lines 59 – 61). The formal

rules that use specific data comparison operators are taught by the rule "Delay a full day if the Probability > 90%, reduce irrigation a special fraction when the 60% probability <= 90%" (column 11, lines 2 - 7).

administration modules for performing administration functions; Creating software to perform the administrative function of time scheduling is anticipated by McCabe el al, which teaches "this method of scheduling can also be combined with end time based scheduling to achieve even greater water savings" (column 12, lines 36 - 38).

background modules for performing background functions required by said processing modules and said administration modules. The background module of a clock is anticipated by McCabe el al, which teaches "when the controller's clock matches or exceeds the start time, the controller activates appropriate hardware" (column 11, lines 11 - 12).

11. As per Claims 6, 13, 20 and 27, McCabe teaches a system and method, wherein said renovation system comprise:

an analyzer module to determine an impact said weather history data had on actual observable problems of the body of water; The use of weather inputs to determine the impact on water supply problems is anticipated by McCabe el al, which teaches "the method of the present invention next uses whatever weather inputs and soil inputs are available to calculate a start time that is proper to allow the irrigation system to deliver the necessary water" (column 6, lines 34 - 37);

a diagnosis module to determine actual fundamental problems for the body of water based on said actual observable problems; Use of observable problems to analyze and solve problems related to the actual problems of a water supply is anticipated by McCabe el al, which

teaches "irrigation controllers using moisture sensors, evapotranspiration and/or other methods to determine the amount of water to apply to a station" (column 13, lines 31 - 34).

a remedy module ("methods of controlling an irrigation system to minimize the amount of irrigation water applied to a turf or crop while still meeting the crop or turf's water requirements", column 1, lines 7 - 10) to estimate the impact said weather forecast data (Table 1, "Rain in inches per month") will have on said actual fundamental problems based on the impact said weather history data and said terrestrial vegetation history data had on said actual observable problems ("rain sensors are designed to override the cycle of an automatic irrigation system when adequate rainfall has been received"), and then to determine, based on the impact said weather forecast data and said terrestrial vegetation forecast data will have on said actual fundamental problems, and at least one solution for said actual fundamental problems, ("the method of least squares regression analysis, or other effective curve means, is used to determine an actual in situ characteristic curve for the specific crop/soil combination being irrigated. Next this in situ characteristic curve is used to calculate the amount of water required to bring the soil moisture or tension from its measured present value to the desired value for each watering event", column 9, line 65 – column 10, line 36), wherein the weather data and the stored crop/soil data to remedy the observable problem of determining how much water to apply to crops or turf.

McCable does teach that ("watering levels and irrigation amounts are typically dependent upon the type of vegetation or greenery", column 3, lines 49 - 50) and that ("evapotranspiration is a measure of the total amount of water needed to grow plants and crops", column 3, lines 55 - 57), McCabe does not teach terrestrial vegetation history data.

Ton does teach terrestrial vegetation history data, "a system for co-displaying a state of a plant and its environment, the system comprising at least one environment detector for monitoring at least one parameter of the plant's environment", (column 2, lines 66 – 67). Both inventions are analogous art because they both teach an aspect of an irrigation system.
It would have been obvious to one of ordinary skill in the art of irrigation systems at the time the invention was made to combine the McCabe irrigation system with the Ton irrigation system in order to develop an irrigation management system that used a wide variety of measures to determine when and how much to water a field of crops. It would be obvious to create this invention because combining vegetation measurement with water level measurement would increase the number of parameters involved in determining when crops should be irrigated and would increase the accuracy of such a device. Increasing the number of methods and factors of measurement would reduce the level of error by presenting more facts to substantiate a conclusion, and would also increase the level of accuracy of the combined device, thereby improving the performance of a water level based and vegetation based irrigation management system.

12. As per Claims 7, 14, 21 and 28, McCabe teaches a system further comprising:

a compliance module to determine compliance for each of said solutions; Using data to initiate action which enables a water application system to comply with a chosen set of irrigation solutions is anticipated by McCabe el al, which teaches "measured rainfall can be used to stop, delay, and/or adjust the amount of remaining water to apply to meet the needs of the plants while minimizing the amount of irrigation water used" (column 12, lines 49 - 53);

a cost module to determine for each of said solutions a list of factors that will aid the user in the renovation and management of the body of water. The factors used to manage how large a body of water is needed to maintain crops is anticipated by McCabe el al, which teaches "this method of the invention requires a measurement of water applied, requires measurement of soil tension and/or moisture content and water events must be qualified to remove erroneous values" (column 10, lines 40 - 46);

wherein said list of factors includes at least one of an estimated cost, years to complete, a possible funding, and a timing of implementation. Timing of implementation as per the fixed time required to apply water is anticipated by McCabe el al, which teaches "controllers apply water by controlling the amount of time a station is on a fixed number of minutes, seconds, or other time base" (column 13, lines 15 - 17).

Response to Amendments

13. Applicant's arguments filed May 26, 2004 regarding 35 USC 101 with respect to claims 1 – 4, 6 – 11, 13 – 18, 20 – 25, 27 and 28 have been considered, but are moot in view of the new ground(s) of rejection.

Applicant's arguments regarding 35 USC 103 have been considered but they are not persuasive.

Applicant argues that the claimed invention does not claim a weather and water level based system. The rejection no longer contains said language.

Applicant argues that the claimed invention does not use weather data and vegetation soil moisture data to manage the volume of water used or available in storage for use in the irrigation

of agricultural products or vegetation. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., weather history data) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argues that the combination of McCabe and Ton do not teach means for accessing a database with data for analyzing a body of water. However, the term database, without incorporation of a technology component, is interpreted to mean any type of data storage means, including those means that do not incorporate technology such as a list or a table of data. Furthermore, the claim language does not disclose what specific data elements comprise weather forecast, weather history or terrestrial vegetation history data the broadest reasonable interpretation was applied and therefore the temperature and humidity data taught by McCabe do teach weather data, while the evaporation data taught by the Ton invention teaches vegetation data.

Applicant argues that the McCabe and Ton references are not relevant to the system for the renovation of a body of water claimed by the applicant. However, the claim language does not specifically recite what comprises a renovation system or a body of water. The recited irrigation system that replenishes the large volume of water in an irrigation system based on weather data does teach an invention that is well within the scope of the applicant's claim language.

Applicant argues that the claims do not recite an irrigation system for managing the watering of crops. However, the claim language's recitation of a body of water and of a

vegetation based system that an irrigation system is a natural fit into the category of a body of water connected with vegetation applying the broadest reasonable interpretation.

Conclusion

14. No claims were allowed and all claims were rejected.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Erickson, Paul, "Determination of Minimum Pool Level for Quabbin Reservoir on the Basis of Water Quality Constraints", 1966.

Morton (US 5,646,863) – Water contamination classification system.

Boatman et al (US 5,892,690) - Environmental monitoring system.

Solman et al (US 4,723,511) – Water monitoring system.

Salvo et al (US 6,356,205) – Environmental monitoring system.

Helfrich, Greg; Haas, Greg; Dubin Gary, "Software developed for disinfection rule compliance", Water Engineering & Management, 1993.

16. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric Shaffer whose telephone number is (703) 305-5283. The Examiner can normally be reached on Monday-Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (703) 305-9643.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington D.C. 20231

Or faxed to:

(703) 746-7238 [After Final communications, labeled "Box AF"]

(703) 746-7239 [Official communications]

(703) 706-9124 [Informal/Draft communications, labeled "PROPOSED" or "DRAFT"]

Hand delivered responses should be brought to Crystal Park 5, 7th floor receptionist.

ETS
September 7, 2004

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